Lesson 8: Nutrient Databases and Software for Child Nutrition Programs

Lesson 8

Nutrient Databases and Software
for Child Nutrition Programs

Slide 1

Background

Success

The success of NuMenus and Assisted NuMenus is dependent upon the school district's ability to analyze the nutritional composition of menus and recipes.

Slide 2

The U.S. Department of Agriculture (USDA) recognizes that the success of NuMenus and Assisted NuMenus and the state monitoring of compliance with the nutrition goals for Food Based Menus are dependent on an accurate nutrient analysis of breakfast and lunch meals and recipes served in schools.

A recent evaluation of more than 15 nutrient analysis software packages revealed that there was an absence of accurate, complete and verified databases.

As USDA looked at the databases contained within the nutrient analysis software packages, there was concern with some of the databases. In general:

Concerns with Databases

- Types of foods
- Food descriptions
- Weights and measurements
- Missing nutritional values
- Limited brand name food products
- No evidence of quality control

Slide 3

- Databases did not contain the types of foods, descriptions, weights and measurements commonly used in child nutrition programs. Specifically, food descriptions were inconsistent and not standardized.
- Many databases contained incomplete and missing nutritional values, which could lead to inaccuracy in

Notes

1 Interest Building Strategy/Set

A database is any collection of information that is organized so you can find what you are looking for. Databases are part of our everyday life. Examples include: telephone books, a checkbook, employee files, encyclopedias, TV Guide, and a classified ad section of a paper.

2 Review Competencies

3 Purpose

To understand the function of the NNDCNP, and how to submit nutrient data into the NNDCNP and local databases.

4 Transfer

Suppose you had two filing cabinets. One of the file cabinets is the National Nutrient database that contains four components that cannot be changed or deleted, except by USDA staff. The second file cabinet is the local database that contains foods offered in your district that are not listed on the NNDCNP at this time. Both of these file cabinets organize your information so it is easily accessible.

nutrient calculations and a misinterpretation of the nutritional analysis.

- The tolerance level for inaccuracy was very high in some databases.
- The databases contained a limited number of brand name food products.
- There was no evidence of quality control in many databases.

The National Nutrient Database for Child Nutrition Programs (NNDCNP)

USDA's Agricultural Research Service (ARS) in cooperation with Food and Consumer Service (FCS) developed a database for CNP that is:

- accurate
- reliable
- complete
- centralized

Slide 4

In cooperation with Food and Consumer Service (FCS), the National Nutrient Database for Child Nutrition Programs (NNDCNP) was developed and is managed by USDA's Agricultural Research Service (ARS). The NNDCNP is available to the software industry and school districts to develop food service software programs for use in nutrient analysis.

The foods included in the NNDCNP are not endorsed or approved by USDA.

Component Files of NNDCNP

The National Nutrient Database contains five component files in the database. These files are locked. Food items and nutrients in the NNDCNP may not be altered by the local user. Food identification codes or numbers are reserved for use in the NNDCNP. In addition, the database contains empty files for a local database for food items that do not appear in the NNDCNP. An SFA needs to enter the foods not listed in the NNDCNP, if offered on school menus, into the local database.

National Nutrient Database

Contents

- 1,800 Reference Foods commonly used in schools
- USDA Commodity Foods
- USDA Quantity Recipe for SFS
- Brand name processed foods used in schools
  USDA Food Buying Guide

Notes

Slide 5

1. Standard Reference (Handbook-8) Foods

This locked file contains the most commonly used foods in school meals. The standard reference food products are derived from USDA Handbook #8.

Foods in the Standard Reference Include:

Beef	Crackers	Oils
Bread	Dairy Products	Puddings
Butter	Eggs	Rice
Cakes	Fish	Salad Dressings
Cereals	Fruits	Soups
Cheese	Macaroni	Spaghetti
Chicken	Margarine	Spices
Condiments	Milk	Turkey
Cookies	Noodles	Vegetables

Slide 6

A list of the items contained within the Standard Reference is included in Appendix H.

2. USDA Commodities

This locked file contains the current USDA commodity foods available to schools for meal plans and service. A list of the commodity foods contained within the NNDCNP is included in Appendix H.

3. USDA Quantity Recipes for School Food Service

This locked file contains all current USDA quantity recipes for school food service, including the new recipes developed for the school lunch and breakfast programs. A list of the recipes contained within the NNDCNP is included in Appendix H. Only the nutrient information is included, not the recipe and directions. Each SFA must enter their own recipes in the local database.

If you are using one of the USDA Quantity Recipes and make any preparation or ingredient changes, you must create and analyze a new recipe and add it to the local database. This includes using alternate and optional ingredients in the USDA recipes.

Notes

5 Instruction
First three are based on USDA Handbook 8 data.

Using the generic software, project examples of bread, milk and chicken from the NNDCNP screen to show components. Show examples or let the audience ask to see two or three items.
Review Appendix H to see various food products contained in NNDCNP.

Using USDA Recipes

- First ingredient only
- Optional ingredients
- Variations
- Create and analyze a new recipe

Slide 7

First Ingredient

A USDA recipe's nutrient analysis is based on the first ingredient listed, not the alternate ingredients. When an alternate ingredient is listed, the nutrient analysis is for the first ingredient.

Example:

Recipe D-13 Beef or Pork Taco

- Raw ground beef or raw ground pork is listed. The recipe analysis is based on the first ingredient listed, raw ground beef.
- Dehydrated onions or fresh onions are listed. Again, the recipe was analyzed using the first ingredient, dehydrated onion, not fresh onions.

You can use ground pork, fresh onions or any other alternate ingredient listed in the recipe, but you must create a new recipe, and add it to the local database.

Optional ingredients

Optional ingredients were not included in the nutritional analysis of the USDA Quantity recipes in the NNDCNP.

Example:

Recipe D-20 Chili Con Carne with Beans

Cheddar cheese is an optional ingredient. If your school district uses cheddar cheese in this recipe, you will have to create a new recipe with cheddar cheese and add it to the local database.

Variations

Some recipe variations are included in the NNDCNP.

Example:

Recipe B-4 Baking Powder Biscuits

Lists three variations:

1. B-4a Baking Powder Biscuit using Master Mix
2. B-4b Cheese Biscuits
3. B-4c Drop Biscuits

Remember, when you use optional or alternate ingredients for the USDA Recipes, you must create a new recipe and analyze the nutrient content of the recipe and add it to the local database.

Notes

In Lesson 9: Nutrient Analysis, the trainer will demonstrate how to vary a recipe's ingredients by creating a new recipe.

Point out the recipe in Appendix A: Recipe Variations.

Show T-1 – T-4, Beef or Pork Taco
Show T-5, Chili Con Carne
Show T-6, Baking Powder Biscuits

4. Brand Name Processed Foods

USDA's Agricultural Research Service (ARS)

- Data reviewed by technical staff
- No charges
- Locked database
- Data updates as needed

Slide 8

Private food companies, processors, and distributors are welcome to submit brand name food items with nutrient data from a nutrient analysis fact sheet or from the food label at no cost to the industry. All data submissions are voluntary and are intended to be cleared through a simple quality control process by technical staff. Brand name processed food product data will be continually updated with NNDCNP releases at least twice a year. Brand name foods used at the local level and missing from the NNDCNP must be entered into the local database.

The new versions will be made available to the software industry and must be loaded into the software system as soon as possible.

5. USDA *Food Buying Guide*

This locked file contains the information needed to purchase the correct food quantities and to determine raw to cooked yield for recipe analysis.

Submitting NNDCNP Nutrient Data

A nutrient data fact sheet or nutrition label information for brand name products may be submitted to the NNDCNP. All nutrient data submissions are reviewed for accuracy and reliability. Companies are not required, but are encouraged, to submit any quality control assurance data.

Factors To Consider When Selecting Food Items from the National Nutrient Database

Notes

Brand name is based on a variety of sources.

Entering items into the local database will be covered later.

Labeling allows 20% variance.

6 Guided Practice
Share with a partner two reasons for developing the NNDCNP. Name the five locked components of the NNDCNP. The trainer will write the answers on a transparency.

Factors to Consider
When Matching Ingredients or Food

- Food category
- Form, i.e., with or without skin and bone
- Preparation method

Slide 9

Factors to consider when matching ingredients or food:

- Food category, type, form, i.e., chicken pieces with or without skin and bones, raw fruit with or without seeds and skin
- Food preparation methods

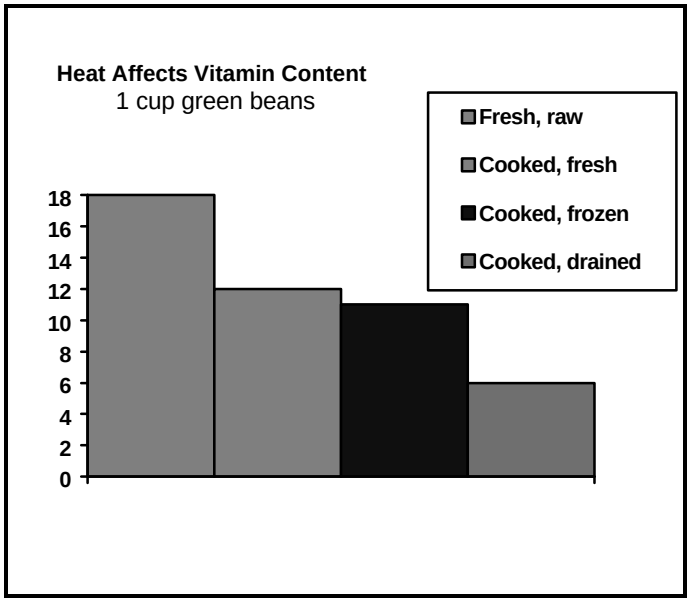
Selecting Correct Form of Food Based on Food Preparation Method

Matching an ingredient or menu item with a food listed in the National Nutrient Database is essential in determining the correct caloric and nutrient value of a food. The nutrient content of raw foods is different from the nutrient content of cooked foods. The nutritive values in the database reflect the amount of vitamins in the form specified in the database. The foods in the National Nutrient Database include foods which are:

- Cooked
- Raw as served
- Frozen, then cooked
- Frozen, then heated
- Condensed, then diluted

Notes

Nutrient Retention



Slide 10

Heat affects the nutrient and vitamin content of many foods. Selecting a cooked food item in the database will have already accounted for vitamin losses. For example, the nutritive value of frozen green beans cooked with salt will be different from the nutritive value of canned green beans.

Selecting Cooked Foods

The database features a list of nutritive values of foods prepared by various heating methods. Foods may be listed as:

- Cooked
  - Boiled
  - Broiled
  - Baked
  - Fried

Foods with these descriptions should be selected only when the ingredient is **cooked** before being served. However, the database does not have the ability to convert "raw" product recipe entries into the "cooked" product nutritive values. You may not enter the raw weight or measure of the food. You must use the USDA ***Food Buying Guide*** in the software to convert from raw to cooked weight.

For example, if a recipe calls for 10 lbs of chicken, check the USDA ***Food Buying Guide*** for the amount of cooked chicken that would be produced and use that figure in the recipe for the database. Your approved software will provide you with the information from the USDA ***Food Buying Guide*** which is stored in the NNDCNP.

Notes

Show the application of the USDA *Food Buying Guide* in the database.

Converting Raw to Cooked Example Baked Chicken (10 lbs cooked chicken) Information excerpted from the USDA ***Food Buying Guide***	
Food as Purchased	Chicken thigh, 4 oz.
Purchase Unit	Pound
Servings per purchase unit	4
Serving size or portion	1 thigh (2.1 oz. of cooked) chicken.
Purchase units for 100	25 lbs
Additional yield information	1 lb. "As Purchased" = .52 lbs cooked chicken
Answer: 10 lbs x .52 = 5.2 lbs of cooked chicken	

Selecting Cooked Single Menu items

Select "cooked – boiled, broiled, baked, fried, etc." – when the weight of a cooked food is listed as a single serving. An example would be a 1/2 cup serving of frozen French fries, oven baked.

Selecting Raw Foods or Cooked Foods

Many foods are listed in the database. Foods can be listed twice. One form will be for food that is eaten raw and not heated or cooked during preparation. The other form may be for raw or frozen food that is to be heated or cooked. The database will already account for vitamin losses of cooked foods.

Key to Choosing Cooked or Raw Foods in NND

- Use the form and portion of the food as served
- Select cooked if cooked before serving
- Select raw if not heated or cooked

Slide 11

Notes

Show example.

Activity
Selecting Foods in the NNDCNP
Students will select the current database item to match those foods

1. Macaroni for macaroni salad
2. Frozen green bean, cooked
3. 1/2 cup frozen french fries, baked

Selecting Correct Measure of Food

Volume or Weight

The unit of measurement selected and entered will depend on how the food is used in the recipe or the menu. When selecting data be sure the correct measure of food is entered, for example, teaspoon, gram, cup, gallon, pound or fluid ounce.

The database contains the nutritive values of food items per 100 gram weights. Therefore, the software will convert any measure (volume, weight) of a food item to a gram weight and calculate its nutritive value for the recipe ingredient amount or menu item. Equivalent weight to volume conversions is a standard feature of USDA-approved nutrient analysis software.

Units of Measurement

- Select correct weight or volume.
- Software will convert measure to a gram weight and calculate its nutritive value.

Slide 12

Notes

Refer students to Appendix B: Equivalent Measures for Common Food Service Utensils.

Notes

Selecting Correct Measurement

Menu Items
1/2 cup Raisin Bran
3/4 cup Canned Peaches
1 cup Popcorn

	Weight (incorrect)	Volume (correct)
Raisin Bran	4 oz. = 356 cal.	1/2 cup = 79 cal.
Peaches	6 oz. = 92 cal.	3/4 cup = 102 cal.
Popcorn	8 oz. = 587 cal.	1 cup = 23 cal.
	1035 calories	204 calories

Note: 4 oz. = 1/4 pound, not 1/2 cup
6 oz. = 1/3 pound, not 3/4 cup
8 oz. = about 1/2 pound, not 1 cup

Slide 13

Selecting the Edible Portion of Food Items

The amount of calories and nutrients in a food will vary depending upon the edible portion of the food. For example, the nutritive value of a three ounce portion of chicken with the skin and bones will be different from the nutritive value of a three ounce portion of boneless, skinless chicken.

Only the edible portion of a food is listed in the database. The database contains the USDA ***Food Buying Guide.*** Use the USDA ***Food Buying Guide*** to convert any **as purchased** weights or measures to **edible portion**. For example, if you tell your staff to use 10 lbs. of **"as purchased"** carrots to make raw carrot sticks, you must convert the carrots to the **edible portion** for entry into the menu plan or recipe.

If you tell your staff to use a 4 oz. raw chicken thigh and to bake and serve it with the skin on, you must convert the **"as purchased"** 4 oz. raw thigh to the equivalent weight of the baked meat and skin only.

School Food Service Software Systems

The National Nutrient Database for Child Nutrition Programs (NNDCNP) will be used by the software industry to develop nutrient analysis and school food service software systems specifically for use in the analysis of school meals.

School Food Service
Software System Functions

- Menu Planning
- Nutrient Analysis
  – Menus
  – Recipes
- Print Management Reports
- Weighted Nutrient Analysis
- Nutrition Labeling Conversion
- Create new RDA Age Category
- Summary Specifications

Slide 14

School Food Service
Software System Functions

- Print Menu Production records
- Compute an accurate nutrient analysis of menus
- Evaluate, if RDA met
- Evaluate, if the Dietary Guidelines for Americans are met

Slide 15

Notes

Give approved software examples. Refer to Appendix D for the summary sheet of software specifications.

The software selected for NuMenus and Assisted NuMenus must be approved by USDA. State agencies will also use a USDA-approved software during state monitoring of Food Based Menus. Contact USDA Food and Consumer Services regional offices or your state agency for an approved list of nutrient analysis software packages.

Local Database

The NNDCNP includes an area for a local database for food items. Foods not listed in the NNDCNP must be entered into the local database, if they are offered on school menus. These foods will be entered by local school food service personnel.

Local Products and Ingredients

Only local products and ingredients may be added, deleted and modified. The procedure for adding a food to the local database will vary in order and method, depending on the nutrient analysis software program.

It is important that schools follow their software programs instructions on developing a local database and avoid using the NNDCNP identification codes.

Food ingredients and nutrient data entered into the local database should not be lost or deleted when your software is

updated with a new version of the NNDCNP. However, once locally entered food items appear in the National Nutrient Database, you should delete those food items from the local database.

Requesting Nutrient Data for Local Database Foods from Food Manufacturers

Requesting a Nutrient Analysis
of Food Products from the
Food Manufacturer

Slide 16

Nutrient data from the food manufacturer must be requested for food items that are offered in school meals which do not appear in the NNDCNP. You should request the nutrient analysis data from the food manufacturer, food distributor and /or food broker.

Food and Consumer Services (FCS) developed a nutrient ***Data Submission Form*** for local school districts to use in requesting nutrient data from food manufacturers. See Appendix C for instructions and the contractual language and the ***Data Submission Form*****.** In addition, this information should be included in all food bids for processed, prepared and convenience foods.

Any generic food such as canned peaches, flour, apples, or condiments, however, may be analyzed using the generic food in the NNDCNP.

Requesting Nutrient Data for the Local Database

As Served
- These foods will not have any ingredients added or do not require any additional preparation.

As Purchased
- These foods will have ingredients added before serving or require additional preparation.

Slide 17

Foods are to be submitted as either **"as served"** or **"as purchased"** on the ***Data Submission Form.***

Notes

Activity: Helping Industry Submit Nutrient Data
Students will share with a partner one way to help industry submit data to NNDCNP.

Review contractual language and sample letter. Appendix C.

In Lesson 6: Food Procurement, you learned how to do a simple check on the nutrient analysis of a manufacturer's product while waiting for it to be added to the NNDCNP.

As Served

Defined as any food that does not have ingredients added in preparation or does not require any additional preparation.

As Purchased

Defined as any food that does have ingredients added in preparation or does require additional preparation.

Foods submitted on an **"as purchased"** basis:

- Are prepared at the school by frying in shortenings or oils
- Have ingredients added in preparation, such as baked product mixes
- Have varying preparation methods, i.e., bake or fry
- Need to account for fat and moisture changes

% Moisture Change

If a food item gains or loses moisture during preparation, the menu planner will need to account for this change when performing a nutrient analysis of the product. In Appendix E, you are provided with a guide on the % of gain or loss of moisture which are characteristic to different food categories. This information can be used when exact data is not available.

% Fat Change

If a food item gains or loses fat during preparation, the menu planner will need to identify the type of fat and account for the gain or loss when performing the nutrient analysis of the product. In Appendix E, you are provided with a guide on the % of gain or loss of fat which are characteristic to different food categories. This information can be used when exact data is not available.

Food Preparation Methods
Fat Gains vs. Fat Loss

Slide 18

Examples of **fat loss** in cooking include:

- Oven-baked chicken, drained
- Broiled hamburger patty
- Meat sauce in which the fat is drained

Examples of **fat gain** in cooking include:

- Deep fried french fries
- Batter or breaded fried chicken

Notes

7 Individual Practice
Demonstration 1 – Appendix F
Adding Chicken Nuggets to Local Database

Demonstration 2 – Appendix F
Adding Cake Mix to Local Database

Demonstration 3 – Appendix F
Adding French Fries to Local Database

- Fried fishsticks

The nutrient data should be carefully reviewed from the food manufacturer, food distributor and /or food broker for accuracy (if possible) before adding to the local database.

Adding a Food to the Local Database

You will need to follow the software's directions in adding a food to the local database. However, all software will have these steps:

Steps in Adding a Food to a Local Database

1. Obtain nutrient data from fact sheet or nutrition label
2. Identification number
3. Food category
4. Brand name
5. Product code

Slide 19

1. Obtain the copies of nutrient data or nutrition labels from the food manufacturer and assign each product an identification number and food category. You cannot use a NNDCNP food item number.
2. Enter the food identification number.
3. Enter the food category.
4. Enter the brand name.
5. Enter the product code.

Steps in Adding a Food to a Local Database

6. Child Nutrition Label number
7. Nutritive value
8. Package size
9. Number of servings per package
10. Weight per serving in grams
11. Serving size

Slide 20

6. Enter the CN Label number (if available). This information is for use by schools using the Food Based Menu Planning system.
7. Enter the nutritive value of each nutrient.
8. Enter the package size.
9. Enter the number of servings per package.
10. Enter the weight per serving in grams.
11. Enter the serving size.

Notes

8 Closure

Selecting the correct food from the database is critical for an accurate and valid nutrient analysis.
Review competencies.

9 Back on the Job...

Review the ingredients and food used in your program. You must get the nutrient analysis of processed foods and individual ingredients that are not in the NNDCNP.

Additional Features

12. Modify
    – Retrieve food item from database
    – Make necessary changes
    – Save it as a food item
13. Delete
    – Follow software directions
    – Only local items
14. Print
    – Food Ingredient Data Report
    – Nutrient Composition Report

Slide 21

12. To modify an existing food product in the database, retrieve the product from the database and repeat steps as needed. Only food items entered locally may be changed.
13. To delete a local food product from the database, follow the software instructions for deleting food products. Only food items entered locally may be deleted.
14. Print a ***Food Ingredient Data Report*** to list the food ingredient and all corresponding data – nutritive value, food ID number, food category, name, product code etc.
15. Print a ***Nutrient Composition Report*** to list food items with their associated nutrient values.

Notes

Appendix A: Recipe Variations

Stir-Fry (Chicken, Beef or Pork)

Ingredients	50 Servings		100 Servings		For ___ Servings	Directions
	Weight	Measure	Weight	Measure		
Low sodium soy sauce 16424		1 cup		2 cups		1. Dissolve cornstarch in soy sauce. Add spices.
Cornstarch 20027	4 oz.	3/4 cup 2 Tbs.	8 oz.	1 3/4 cup		
Ground ginger 2021		1/2 tsp.		1 tsp.		
Granulated garlic 2020		3 Tbs.		6 Tbs.		
White pepper 2032		2 tsp.		1 Tbs. 1 tsp.		
Chicken stock, low sodium, non-MSG 6172		2 qt.		1 gal.		2. Heat chicken stock to a boil and slowly stir in cornstarch mixture. Return to a simmer. 3. Cook for 3-5 minutes, until thick. Remove from heat.
<u>Fresh mixed vegetables</u>						
Fresh broccoli 11090	5 lb. 10 oz.	2 gal.	11 lb. 4 oz.	4 gal.		4. Cut stems from the broccoli. Peel and slice. Chop flowerettes into bite-sized pieces. Prepare no more than 50 portions per batch.
Fresh carrots, peeled 1/4" slices 11124	5 lb. 10 oz.	1 gal. 2 cups	11 lb. 4 oz.	2 gal. 1 qt.		
Onions, diced 11282	1 lb. 4 oz.	1 qt.	2 lb. 8 oz.	2 qt.		5. Sauté sliced carrots in oil for 4 minutes. Add onions, cook for one more minute. Add broccoli and cook for two more minutes. Return to steamtable pan. Keep warm.
or						
Frozen mixed Oriental Vegetables	12 lb. 8 oz.	3 gal. 2 qt.	25 lb.			
Vegetable oil 4623	1/2 cup			1 cup		
Skinless, boneless chicken breasts, cut 2"x2" 5063 Raw 5062	9 lb.		18 lb.			6. Sauté chicken in oil for 3-5 minutes until no signs of pink remain. Add chicken to vegetables in steamtable pan. Add sauces and mix to coat chicken and vegetables with sauce. Heat to serving temperature.

Appendix B: Equivalent Measures for Common School Food Service Utensils

Table 1

Scoop Number	Level Measure
6	2/3 cup
8	1/2 cup
10	3/8 cup
12	1/3 cup
16	1/4 cup
20	3 1/3 tablespoons
24	2 2/3 tablespoons
30	2 tablespoons
40	1 2/3 tablespoons
50	3 3/4 teaspoons
60	3 1/4 teaspoons
70	2 3/4 teaspoons
100	2 teaspoons

Table 2

Ladle Number	Approximate Measure
1 ounce	1/8 cup
2 ounce	1/4 cup
4 ounce	1/2 cup
6 ounce	3/4 cup
8 ounce	1 cup
12 ounce	1 1/2 cups

Appendix C: Submission of Nutrient Data and Letters

Submission of Nutrient Data to the School District from the Food Manufacturer

Instructions

A value must be submitted for each required nutrient per serving, edible portion, in the unit of measure indicated, and to the number of decimal places indicated on the form. If a food item does not contain a specific nutrient, enter zero. Do not leave any spaces blank on the data submission form. If any required nutrient values are missing, the food product can be entered into the local database, but the missing nutrient values must be marked as "missing," rather than zero.

Nutrient data are to be submitted on the **"as served"** basis for any food that does not have ingredients added in preparation of fat absorbed during preparation.

Nutrient data are to be submitted on the **"as purchased"** basis for 1) any foods that have ingredients added in preparation, such as milk, eggs, and oil added to baked product mixes; 2) foods that have varying preparation methods, i.e., bake or fry; 3) foods that are prepared by frying; and 4) any food that gains or loses moisture during preparation. Additional data are required for **"as purchased"** nutrient data submissions.

If a food item gains or loses fat during preparation, provide the percentage of fat gain or loss when the product is prepared _____ +/- change.

Second, if a food item gains or loses moisture during preparation, provide the percentage of moisture gain or loss when the product is prepared. _____ +/- moisture change.

Fat may be gained or lost in cooking some foods, thereby changing the caloric value of food. Methods of preparation such as breading, frying or baking affect this fat gain or loss. For example, chicken baked in the oven will lose fat during cooking, while batter-coated or breaded chicken that is deep-fried will gain fat during cooking. If fat is absorbed or gained, calories will be increased. If fat is lost, calories will be decreased. In recipes where a fat gain or loss occurs, the fat changes are limited to those ingredients that are cooked together. For example, a fat gain occurs in deep-frying of French fries because fat is absorbed by the ingredients in the food item. Fat is lost from a broiled hamburger patty in which the fat has been drained.

This information will be used to develop and analyze the nutritional content of the recipe and will allow each school district to prepare the food products according to regional preference.

Appendix C: Data Submission Form

For bid package to local school purchasing office

Data Submission Form

Data submitted for this product are on (check one):

"As Served" basis: _____ "As Purchased" basis _____

Brand: _____

Product name: _____

Product code: _____

CN label number: _____

Package size: _____ lbs _____ fluid oz. _____ grams

Standard serving: _____

Number of servings per package: _____

Weight per serving: _____ grams

Analysis based on: _____ (100 grams or servings)

A value must be entered for each nutrient. If the food item does not contain a specific nutrient, enter zero (0).

Nutrients	Measurement	Fill in Nutrient	Unit Weight
Calories	xxx		kcal
Protein	xx.xxx		grams
Total fat	xx.xxx		grams
Saturated fat	x.xxx		grams
Carbohydrates	xx.xxx		grams
Total dietary fiber	xx.xx		grams
Cholesterol	xx.xx		milligrams
Calcium	xx.x		milligrams
Iron	xx.xxx		milligrams
Sodium	xx.x		milligrams
Vitamin C	x.xx		milligrams
Vitamin A	x.x		IU
Fat change (+/-)*	xxxx	%	N/A
Moisture change (+/-)*	xxxx	%	N/A

*** If available**

Appendix C: Submission of Nutrient Data and Letters (continued)

Preparation instructions to include: ingredients to be added and amounts, cooking methods, time and temperature.

What source of nutrient data was used to calculate the nutrient analysis?

___ 1. Laboratory analysis (analytical).
___ 2. Handbook 8 calculations (calculated).
___ 3. Combination of 1 and 2 (analytical and calculated).
___ 4. Nutrition Label.
___ 5. Other. Please specify.

This data submission form is for **Local School Food Service**.

Appendix D: Software Requirements

Description of Software Requirements and Functions

Nutrient Standard Menu Planning software which meets the specifications for use in the Child Nutrition Program must comply with the following criteria:

All of the appropriate files and fields from the National Nutrient Database for Child Nutrition Programs (NNDCNP) must be incorporated into the software (standard reference foods, USDA standardized recipe food items, commodity foods, manufacturer's foods, weights and measures, and the Buying Guide). Information provided by the NNDCNP cannot be altered by users; however, user-entered information can be edited or deleted. New food items will be able to be entered locally by the user from information provided in a manufacturer's fact sheet or food label in nutrients per serving or specific weight, or percent of the Daily Reference Value (DRV). The software will automatically convert measures for weight and volume (if available) at all levels of item entry, recipe development, and menu planning.

The user will be able to enter recipes; the software will produce a recipe report that includes the recipe code number, recipe name, serving/portion size, yield of the recipe based on number of servings, ingredients, the amount of each ingredient in units appropriate for food service, preparation instructions, and nutrient value of the recipe per serving or per 100 g (with nutrient changes calculated due to moisture/fat factors). The Recipe Nutrient Composition Report will contain the nutrient value contributed by each ingredient and the total nutrient value of the recipe per serving or per 100 g. The yield of the recipe will be able to be accurately adjusted to meet the needs of the food service without degrading the base recipe. A Recipe/Ingredient Cross Reference report will identity recipes that contain a certain food ingredient.

Menus for a specific site can be developed and copied to another site or data range and the serving sizes adjusted for various age groups. Menu Reports will be available in both calendar and report formats. A Menu Production Record can be printed for use by food service workers to determine the quantities and serving sizes of food to prepare for a specific site.

The Standard and Modified RDA data sets provided USDA are incorporated into the software and used for comparison in nutrient analyses. A new nutrient standard (e.g., age 5-11) can be created, simply by entering the age or age range of the new grouping. A Weighted Nutrient Analysis of an individual menu or range of menu dates can be provided. A summary of the calculated nutrient value of the menu is then compared to the nutrient standards of a selected age group and deficiencies highlighted. The software will search the database for food items containing specific nutrients, so that menus can be adjusted to meet the nutrient standards.

The nutrient composition of all food items and recipes in the database (NNDCNP and local) can be printed, including all required nutrients (calories, protein, carbohydrate, fat, cholesterol, saturated fat, Vitamin A, Vitamin C, iron, calcium, sodium, fiber, and the percentage of calories from protein, carbohydrate, fat, and saturated fat).

Training Documents and the User's Manual must be presented in a complete, sequential, easy-to-understand format. The developer must have a system to update the database whenever a new release of the NNDCNP is available.

Appendix E: Common Moisture and Fat Change Values (%) During Food Preparation

Food Item	Moisture Change %	Fat Change %
Beans and Franks	-5	0
Biscuit	-12	0
Bread	-8	0
Brownie	-6	0
Cake	-12	0
Chicken (with or without skin, coating)		
Baked	-18	-8
Fried	-40	+10
Chicken Patty, Nugget (with or without skin, coating)		
Baked	-9	-1
Fried	-3	+1
Reheat	-4	0
Chicken Tetrazzini	-10	0
Cobbler	-9	0
Cookie	-12	0
Cupcake	-19	0
Egg Roll		
Baked	-5	0
Fried	-10	+5
Eggs		
Omelet	-8	0
Scrambled	-8	0
Fish Fillet (with or without skin, coating)		

Food Item	Moisture Change %	Fat Change %
Baked	-12	0
Fried	-17	+5
Fish Stick, Patty, Nugget (with or without skin, coating)		
Baked	-9	-1
Fried	-3	+1
Reheat	-4	0
Frankfurter	-5	-1
French Fries		
Baked	-14	-1
Fried	-13	+5
Grilled Cheese Sandwich	-4	0
Hamburger Patty	-14	-11
Lasagna	-7	0
Macaroni and Cheese	-9	0
Manicotti	-12	0
Meat Mixture	-10	0
Meatloaf	-14	-9
Muffin	-11	0
Pancake, reheat	-6	0
Pizza (baked or reaheat)	-5	0
100% Soy Patty	-8	0
Soy/Beef Patty	-8	-10
Spaghetti w/Meat Sauce	-6	0
Taco/Burrito	0	0
Tator Tots		
Baked	-13	-1

Food Item	Moisture Change %	Fat Change %
Fried	-8	+5
Tuna Casserole	-10	0
Turkey, baked		
Burger	-20	-9
Roast/whole	-22	-6
Turnover	-5	0
Vegetable Mixture	-10	0
Waffle, reheat	-3	0

Note: These moisture/fat change values apply to the nutrient analysis of processed food products supplied by industry to the local school. The moisture fat change factors adjust the **"as purchased"** product nutrient data to **"as served"** product nutrient data, which is the final product (ready to eat). Moisture/fat change values for food items in the chart represent all cooking methods, unless otherwise specified. In general, assume zero (0) moisture/fat change for food items that are heated/reheated.

Appendix F: Demonstration 1: Chicken Nuggets

For bid package to local school purchasing office

Data Submission Form

Data submitted for this product are on (check one):

"As Served" basis _____ "As Purchased" basis X

Brand: Feathers

Product name: Chicken Nuggets

Product code: 3984

CN label number: 2555

Package size: 20 lbs _____ fluid oz. _____ grams

Standard serving: 4 oz.

Number of servings per package: 80

Weight per serving: 113 grams

Analysis based on: 113 gm (100 grams or servings)

A value must be entered for each nutrient. If the food item does not contain a specific nutrient, enter zero (0).

Nutrients	Measurement	Fill in Nutrient	Unit Weight
Calories	xxx		kcal
Protein	xx.xxx		grams
Total fat	xx.xxx		grams
Saturated fat	x.xxx		grams
Carbohydrates	xx.xxx		grams
Total dietary fiber	xx.xx		grams
Cholesterol	xx.xx		milligrams
Calcium	xx.x		milligrams
Iron	xx.xxx		milligrams
Sodium	xx.x		milligrams
Vitamin C	x.xx		milligrams
Vitamin A	x.x		IU
Fat change (+/-)*	xxxx	%	N/A
Moisture change (+/-)*	xxxx	%	N/A

*** If available**

Nutrition Facts

Feathers Chicken Nuggets

Serving Size 8 Nuggets (113g)
Servings Per Container about 80

Amount Per Serving

Calories 373 Calories from Fat 240

	% Daily Value*
Total Fat 27g	**40%**
Saturated Fat 7g	**31%**
Cholesterol 67mg	**23%**
Sodium 653mg	**27%**
Total Carbohydrate 19g	**7%**
Dietary Fiber 3g	**7%**
Sugars 5g	**0**
Protein 15g	**29%**

Vitamin A 3% • Iron 4%

Not a significant source of Vitamin C and Calcium.

*Percent Daily Values are based on a 2,000 calorie diet.

Appendix F: Demonstration 1

Preparation instructions to include: ingredients to be added and amounts, cooking methods, time and temperature.
Baked at 400° F in convection oven for 13 minutes.

What source of nutrient data was used to calculate the nutrient analysis?

X 1. Laboratory analysis (analytical)
__ 2. Handbook 8 calculations (calculated).
__ 3. Combination of 1 and 2 (analytical and calculated).
__ 4. Nutrition Label.
__ 5. Other. Please specify.

This data submission form is for **Local School Food Service use only.**

Appendix F: Demonstration 2: Cake Mix – Data Submission Form

For bid package to local school purchasing office

Data Submission Form

Data submitted for this product are on (check one):

"As Served" basis:		"As Purchased" basis	X
Brand:	Baker		
Product name:	Yellow Cake Mix		
Product code:	2110		
CN label number:	N/A		
Package size:	5 lbs	fluid oz.	grams
Standard serving:	72 per package		
Number of servings per package:	72		
Weight per serving:	50 grams		
Analysis based on:	50 gm	(100 grams or servings)	

A value must be entered for each nutrient. If the food item does not contain a specific nutrient, enter zero (0).

Nutrients	Measurement	Fill in Nutrient	Unit Weight
Calories	xxx	202	kcal
Protein	xx.xxx	2.350	grams
Total fat	xx.xxx	2.750	grams
Saturated fat	x.xxx	1.293	grams
Carbohydrates	xx.xxx	42.050	grams
Total dietary fiber	xx.xx	.65	grams
Cholesterol	xx.xx	0	milligrams
Calcium	xx.x	72.5	milligrams
Iron	xx.xxx	.618	milligrams
Sodium	xx.x	302.0	milligrams
Vitamin C	x.xx	0	milligrams
Vitamin A	x.x	7.5	IU
Fat change (+/-)*	xxxx	0%	N/A
Moisture change (+/-)*	xxxx	-18%	N/A

***If available**

Appendix F: Demonstration 2

Preparation instructions to include: ingredients to be added and amounts, cooking methods, time and temperature.

Add eggs, water and fat. Prepare according to directions on box. Bake at 350º F for 20 minutes.

What source of nutrient data was used to calculate the nutrient analysis?

__ 1. Laboratory analysis (analytical).
__ 2. Handbook 8 calculations (calculated).
X 3. Combination of 1 and 2 (analytical and calculated).
__ 4. Nutrition Label.
__ 5. Other. Please specify.

This data submission form is for **Local School Food Service use only.**

Appendix F: Demonstration 3: French Fries – Data Submission Form

For bid package to local school purchasing office

Data Submission Form

Data submitted for this product are on (check one):

"As Served" basis:		"As Purchased" basis	X

Brand:	Goody
Product name:	Oven Crinkle
Product code:	24740
CN label number:	N/A
Package size:	5 lbs ____ fluid oz. ____ grams
Standard serving:	2 1/2 oz
Number of servings per package:	32
Weight per serving:	70.88 grams
Analysis based on:	70.88 gm (100 grams or servings)

A value must be entered for each nutrient. If the food item does not contain a specific nutrient, enter zero (0).

Nutrients	Measurement	Fill in Nutrient	Unit Weight
Calories	xxx	163	kcal
Protein	xx.xxx	2.700	grams
Total fat	xx.xxx	4.800	grams
Saturated fat	x.xxx	1.355	grams
Carbohydrates	xx.xxx	27.200	grams
Total dietary fiber	xx.xx	.72	grams
Cholesterol	xx.xx	0	milligrams
Calcium	xx.x	10.0	milligrams
Iron	xx.xxx	1.300	milligrams
Sodium	xx.x	38.0	milligrams
Vitamin C	x.xx	7.00	milligrams
Vitamin A	x.x	0	IU
Fat change (+/-)*	xxxx	-1%	N/A
Moisture change (+/-)*	xxxx	-14%	N/A

***If available**

Appendix F: Demonstration 3

Preparation instructions to include: ingredients to be added and amounts, cooking methods, time and temperature.

Heat on a pan in a convection oven at 350º F for 15 minutes.

What source of nutrient data was used to calculate the nutrient analysis?

__ 1. Laboratory analysis (analytical).
X 2. Handbook 8 calculations (calculated).
__ 3. Combination of 1 and 2 (analytical and calculated).
__ 4. Nutrition Label.
__ 5. Other. Please specify.

This data submission form is for **Local School Food Service use only.**

Appendix G: Computer Lab Exercise 1: Fish Sticks

For bid package to local school purchasing office

Data Submission Form

Data submitted for this product are on (check one):

"As Served" basis:		"As Purchased" basis	X
Brand:	Krunchy Lite		
Product name:	Pollock Fish Sticks		
Product code:	06-240		
CN label number:	5492		
Package size:	10 lbs	____ fluid oz.	____ grams
Standard serving:	4 oz.		
Number of servings per package:	40		
Weight per serving:	113 grams		
Analysis based on:	113 gm (100 grams or servings)		

A value must be entered for each nutrient. If the food item does not contain a specific nutrient, enter zero (0).

Nutrients	Measurement	Fill in Nutrient	Unit Weight
Calories	xxx		kcal
Protein	xx.xxx		grams
Total fat	xx.xxx		grams
Saturated fat	x.xxx		grams
Carbohydrates	xx.xxx		grams
Total dietary fiber	xx.xx		grams
Cholesterol	xx.xx		milligrams
Calcium	xx.x		milligrams
Iron	xx.xxx		milligrams
Sodium	xx.x		milligrams
Vitamin C	x.xx		milligrams
Vitamin A	x.x		IU
Fat change (+/-)*	xxxx	%	N/A
Moisture change (+/-)*	xxxx	%	N/A

***If available**

Nutrition Facts

Krunchy Lite Pollock Fish Sticks

Serving Size 4-1 oz. (113g)
Servings Per Container about 40

Amount Per Serving	
Calories 181	Calories from Fat 54
	% Daily Value*
Total Fat 6g	**9%**
Saturated Fat 0g	**0%**
Cholesterol 57mg	**17%**
Sodium 260mg	**11%**
Total Carbohydrate 13g	**4%**
Sugars 0g	
Protein 16g	

Iron 2%

Not a significant source of Dietary Fiber, Vitamin A, Vitamin C and Calcium.

*Percent Daily Values are based on a 2,000 calorie diet.

Appendix G: Computer Lab Exercise 1

Preparation instructions to include: ingredients to be added and amounts, cooking methods, time and temperature.
Heat on pan in convection oven for 15 minutes at 425º F.

What source of nutrient data was used to calculate the nutrient analysis?

__ 1. Laboratory analysis (analytical).
__ 2. Handbook 8 calculations (calculated).
X 3. Combination of 1 and 2 (analytical and calculated).
__ 4. Nutrition Label.
__ 5. Other. Please specify.

This data submission form is for **Local School Food Service use only.**

Appendix G Computer Lab Exercise 2: Basic Muffin Mix

For bid package to local school purchasing office

Data Submission Form

Data submitted for this product are on (check one):

"As Served" basis:		"As Purchased" basis	X
Brand:	Baker		
Product name:	Basic Muffin Mix		
Product code:	8282		
CN label number:	N/A		
Package size:	5 lbs	fluid oz.	grams
Standard serving:	1/3 cup dry mix		
Number of servings per package:	56-60		
Weight per serving:	40 grams		
Analysis based on:	40 gm (100 grams or servings)		

A value must be entered for each nutrient. If the food item does not contain a specific nutrient, enter zero (0).

Nutrients	Measurement	Fill in Nutrient	Unit Weight
Calories	xxx	170	kcal
Protein	xx.xxx	4.125	grams
Total fat	xx.xxx	6.000	grams
Saturated fat	x.xxx	1.500	grams
Carbohydrates	xx.xxx	25.625	grams
Total dietary fiber	xx.xx	1.00	grams
Cholesterol	xx.xx	0	milligrams
Calcium	xx.x	80.5	milligrams
Iron	xx.xxx	2.125	milligrams
Sodium	xx.x	430.0	milligrams
Vitamin C	x.xx	0	milligrams
Vitamin A	x.x	0	IU
Fat change (+/-)*	xxxx	0%	N/A
Moisture change (+/-)*	xxxx	-11%	N/A

***If available**

Appendix G: Computer Lab Exercise 2

Preparation instructions to include: ingredients to be added and amounts, cooking methods, time and temperature.
Add eggs milk and fat. Bake 18 - 20 minutes at 400º F.

What source of nutrient data was used to calculate the nutrient analysis?

__ 1. Laboratory analysis (analytical).
X 2. Handbook 8 calculations (calculated).
__ 3. Combination of 1 and 2 (analytical and calculated).
__ 4. Nutrition Label.
__ 5. Other. Please specify.

This data submission form is for **Local School Food Service use only.**

Appendix H: The National Nutrient Database for Child Nutrition Programs

Appendix I: Instructor Outline

Lesson 8: Nutrient Databases and Software for Child Nutrition Programs

Lesson Time:

Approximately 1 1/2 hours

Equipment

- ✔ Computer
- ✔ Slide projector
- ✔ 2 screens

Materials

- ✔ Slides
- ✔ Transparencies:
  - T-1 – T-4 Beef or Pork Taco
  - T-5 Chili con Carne
  - T-6 Baking Powder Biscuits
  - T-7 Appendix F: Demonstration 1, Chicken Nuggets Nutrition Label
  - T-8 Appendix F: Demonstration 2, Cake Mix, Data Submission Form
  - T-9 Appendix F: Demonstration 3, French Fries, Data Submission Form

Lesson Plan Outline:

1. Interest Building Strategy/Set
   a) A database is any collection of information that is organized so you can find what you are looking for. Databases are part of our everyday life. Examples include: telephone books, a checkbook, employee files, encyclopedias, TV Guide, and a classified ad section of a paper.
2. Review Competencies
3. Purpose
   a) To understand the function of the NNDCNP, and how to submit nutrient data into the NNDCNP and local databases. In Lesson 6: Food Procurement, you will enter foods into the local database.
4. Transfer
   a) Suppose you had two filing cabinets. One of the file cabinets is the National Nutrient database that contains four components that cannot be changed or deleted, except by USDA staff. The second file cabinet is the local database that contains foods offered in your district that are not listed on the NNDCNP at this time. Both of these file cabinets organize your information so it is easily accessible.
5. Instruction
   a) An overview of the National Nutrient Database including purpose, review of existing databases, and software and development of the database.
   b) Contents of the National Nutrient Database. Using the generic software, project examples of the NNDCNP to show components:
      i) USDA Standard Reference Foods
      ii) USDA Commodities
      iii) USDA Quantity Recipes for School Food Service
         a) Show T-1 – T-4 Beef or Pork Taco
         b) Show T-5 Chili Con Carne
      iv) Guided Practice
         a) Show T-6 Baking Powder Biscuits
         b) Recipe Variations
            (1) In Lesson 9: Nutrient Analysis, the trainer will demonstrate how to vary a recipe's ingredients by creating a new recipe.
            (2) Point out the recipe in Appendix A: Recipe Variations.
      v) Brand name processed foods.
      vi) Share with a partner two reasons for developing it. Name the five components.
   c) Submitting NNDCNP Nutrient Data
   d) Factors to consider when selecting food items from the database:
      i) Selecting correct form of food based on food preparation
      ii) Nutrient retention
      iii) Selecting cooked foods
      iv) Selecting cooked single menu item
      v) Selecting raw foods or cooked foods
      vi) Selecting correct measure of foods
         a) Refer students to Appendix B: Equivalent Measures for Common Food Service Utensils.
      vii) Selecting the edible portion of food items
      viii) Activity: Selecting Foods in the NNDCNP.
      Students will select the correct database item to match these foods:
         a) macaroni for macaroni salad
         b) frozen green beans
         c) 1/2 cup frozen french fries
   e) School Food Service Software System
   f) Local database
   g) Requesting Nutrient Data for Local Database from food manufacturers

i) Review Submission of Nutrient Data Form, and sample letter.
ii) Review adding foods "As Served" or "As Purchased."
iii) Activity: Helping Industry Submit Nutrient Data. Share with a partner one way to help industry submit data to NNDCNP.

h) Adding a Food to the Local Database.
i) Food Item ID number
ii) Brand Name
iii) Product Code
iv) CN Label Number (where applicable)
v) Nutrient value of each food item
vi) Package size, number of servings per package, weight per serving size
vii) Changing or editing food items in the database
viii) Print ***Food Ingredients Data Report***
ix) Print ***Nutrient Composition Report***

i) Demonstration 1: Adding Chicken Nuggets to local database
j) Demonstration 2: Adding Cake Mix to local database
k) Demonstration 3: Adding French Fries to the local database

6. Guided Practice
a) Activity: NNDCNP
Share with a partner two reasons for developing it. Name the five components.
b) Demonstration 1: Adding Chicken Nuggets to local database
c) Demonstration 2: Adding Cake Mix to local database
d) Demonstration 3: Adding French Fries to the local database

7. Individual Practice
a) Lab exercises for students to add brand name products to the local database. Students can complete these in the computer lab.

8. Closure
a) Selecting the correct food for a menu or recipe nutrient analysis is critical for an accurate and valid analysis.
b) Review competencies.

9. Back on the Job...
a) Review the ingredients and food used in your program. Get the nutrient analysis of processed foods and individual ingredients that are not in the NNDCNP.

10. Lesson Appendices
a) Appendix A: Recipe Variations
b) Appendix B: Equivalent Measures for Common School Food Service Utensils
c) Appendix C: Submission of Nutrient Data and Letters
d) Appendix D: Software Requirements
e) Appendix E: Common Moisture and Fat Change Values (%) During Food Preparation
f) Appendix F: Demonstration 1 – Chicken Nuggets
Demonstration 2 – Cake Mix
Demonstration 3 – French Fries

g) Appendix G: Computer Lab Exercise 1: Fish Sticks
Computer Lab Exercise 2: Basic Muffin Mix
h) Appendix H: NNDCNP Database
i) Appendix I: Instructor Outline

Lesson 8: Nutrient Databases and Software for Child Nutrition Programs

Competencies

Participants will be able to:

1. Name two reasons for the development of the National Nutrient Database for Child Nutrition Programs (NNDCNP).
2. List the five components of the National Nutrient Database for Child Nutrition Programs.
3. Select the correct database item to match specified data to NNDCNP.
4. Name one way to help industry submit data to NNDCNP.